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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,934	04/12/2001	Suhail S. Saquib	8448/RMD	3221

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POLAROID CORPORATION  
PATENT DEPARTMENT  
1265 MAIN STREET  
WALTHAM, MA 02451

EXAMINER

AMINI, JAVID A

ART UNIT	PAPER NUMBER
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2672

15

DATE MAILED: 11/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/833,934

Applicant(s)

SAQUIB ET AL.

Examiner

Javid A Amini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 6 is/are rejected.
- 7) ☒ Claim(s) 2-5, 7-10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Response to Arguments***

In view of the Appeal brief filed on July 26, 2004, PROSECUTION IS HEREBY REOPENED. New ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Examiner's comment: Examiner encourages Applicant to schedule an interview.

***Allowable Subject Matter***

Claims 2-5 and 7-10 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Ercan et al. and further in view of Heller et al.

1. Claim 1

“A method for electronically capturing and processing image information comprising the steps of *(see Ercan col. 3, lines 25-35).*

(a) providing a two-dimensional array of discrete image sensing elements, each discrete element capable of providing an electronic information signal in response to incident illumination, said electronic information signal corresponding to the intensity of said incident illumination, each discrete element being specifically responsive to one of at least three predetermined colors; *(see fig. 1 of Ercan Examiner's interpretation: The Camera is providing two dimensional of image, and each element or picture being responsive to one of three colors red, green and blue in fig. 1 steps 1-4 ).* (b) obtaining first color image data by exposing the two-dimensional array to image-information bearing illumination such that each discrete element provides said electronic information signal, said first color image data comprising the collection of said electronic information signals; *(see Ercan fig. 4 illustrates an electronic information signal of fig. 3. And also fig. 4 comprises the collection of electronic information signals).* (c) recovering missing color information along a first dimension by (i) interpolating the first color image data along said first dimension to provide first interpolated color data, (ii) forming a first difference channel between said first color image data and said first-interpolated color data, (iii) applying a first one-dimensional non-linear filter to said first difference channel, whereby the first-recovered image data is obtained as a combination of the first color image data and the filtered first difference channel, and iv) forming second color data comprising the first color data and the

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first recovered color data; and (d) recovering missing color information along a second dimension by (i) interpolating the second color image data along said second dimension to provide second interpolated color data, (ii) forming a second difference channel between said second color image data and said second interpolated color data, (iii) applying a second one-dimensional non-linear filter to said second difference channel, whereby the second-recovered color data is obtained as a combination of the second color data and the filtered second difference channel, and iv) forming final recovered image data comprising the second color data and the second recovered color data" ( *see Ercan fig. 4 illustrates the percentages of intensity verses the number of pixels. Examiner's interpretation: Ercan does not explicitly specify recovering missing color information along first and second dimensions. However, a person skilled in the art would compared the dimensions of the invention with Ercan's invention in fig. 4 illustrates one dimension as an intensity and the other dimension as a number of pixel. Remember that Applicant does not specify in the claim langue the type of dimensions. It could be ( x, y), (intensity, max), and (intensity, level) and etc. Heller et al. teaches in (col. 9, lines 1-4), in step 84, compensation pixel values are generated to replace the missing data from the defective pixels in sensor array 12. In one preferred embodiment, examining the pixel values of the pixels surrounding the defective pixels generates the compensation pixel values. Thus, the pixel values of each surrounding pixels of a defective pixel are averaged to arrive at a compensation pixel value. In another embodiment, the pixel value of a pixel that precedes the defective pixel is used as the compensation pixel value. Applicant specifically called first image as a first dimension and second image as a second dimension. Ercan in fig. 13 illustrates that the analog mux signals (all dimensions here is two*

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*dimensions) inputting in to the non-linear amplifier. Ercan in col. 4 lines 58-65 teaches the first and second digital images may be obtained in any suitable manner. They may be obtained simultaneously or sequentially. It is preferred that a single optical plane or path be used to ensure pixel relativity in each image, so that pixels align correctly. One image may have a longer exposure time than the other. Additionally or alternatively, an optical filter may be applied to a digital camera in taking one of the images. Ercan in abstract discloses that a related method of processing digital image information involves modifying pixel intensities according to a non-linear algorithm (examiners' interpretation: it can be a non-linear filter), with the result that one or more regions of the image have their median pixel intensities adjusted to a level which is closer to the median pixel intensity for other parts of the image. Ercan in Figs. 6A, 9A and 10A illustrate the missing information. Heller et al. (Heller), Heller in Fig. 6 illustrate in step 84, compensation pixel values are generated to replace the missing data from the defective pixels in sensor array 12. In one preferred embodiment, examining the pixel values of the pixels surrounding the defective pixels generates the compensation pixel values. See Heller in col. 4, lines 10-35. Referring to the specification on page 15 lines 20-21 Applicant discloses that filter 232 can be a non-linear filter that is provided to remove narrow peaks and valleys within the color difference signal. Heller in col. 4 lines 5-9 teaches that Controller unit 16, depending upon the configuration, can perform one of a wide variety of image processing operations including, for example, pattern recognition operations, filtering operations, Fourier transform operations, and the like. Thus, the pixel values of each surrounding pixels of a defective pixel are averaged to arrive at a compensation pixel value. In another embodiment, the pixel value of a pixel that precedes the defective pixel is used as*

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*the compensation pixel value. Therefore Ercan and Heller suggest applicant's invention.*

*Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Heller into Ercan in order for interfacing with the programmable non-volatile memory and accessing the defective pixel location information; and a input/output port for communicating with control and post-processing circuitry.*

2. Claim 6.

The rejection of claim 6 is similar to rejection of claim 1.

“An electronic imaging apparatus comprising: *(see Ercan col. 3, lines 25-35).*

a two-dimensional array of discrete image sensing elements for generating first color image data, each discrete element capable of providing an electronic information signal in response to incident illumination, said electronic information signal corresponding to the intensity of said incident illumination, each discrete element being specifically responsive to one of at least three predetermined colors; *(see fig. 1 of Ercan Examiner's interpretation: The Camera is providing two dimensional of image, and each element or picture being responsive to one of three colors red, green and blue in fig.* a first color recovery module for generating a second color image data from said first color image data, the first color recovery module having first means for interpolating said first color data along a first dimension to provide first-interpolated color data, first means for non-linear filtering and combining said first-interpolated color data with said first color image data in said first dimension to provide first recovered color data, and forming second color data comprising said first color data and said first-recovered data; *(see Ercan fig. 4 illustrates an electronic information signal of fig. 3. And also fig. 4 comprises the collection of electronic information signals)* .and a second color recovery for generating a final

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color-recovered image data from said second color image data, the second color recovery module having second means for interpolating said second color data along a second dimension to provide second interpolated color data, second means for non-linear filtering and combining said second, interpolated color data with said second color image data in said second dimension to provide a second-recovered color data, and forming a final recovered image, comprising said second color data and said second-recovered data" ( *see Ercan fig. 4 illustrates the percentages of intensity verses the number of pixels. Examiner's interpretation: Ercan does not explicitly specify recovering missing color information along first and second dimensions. However, a person skilled in the art would compared the dimensions of the invention with Ercan's invention in fig. 4 illustrates one dimension as an intensity and the other dimension as a number of pixel. Remember that Applicant does not specify in the claim langue the type of dimensions. It could be ( x, y), (intensity, max), and (intensity, level) and etc. Heller et al. teaches in (col. 9, lines 1-4), in step 84, compensation pixel values are generated to replace the missing data from the defective pixels in sensor array 12. In one preferred embodiment, examining the pixel values of the pixels surrounding the defective pixels generates the compensation pixel values. Thus, the pixel values of each surrounding pixels of a defective pixel are averaged to arrive at a compensation pixel value. In another embodiment, the pixel value of a pixel that precedes the defective pixel is used as the compensation pixel value. Applicant specifically called first image as a first dimension and second image as a second dimension. Ercan in fig. 13 illustrates that the analog mux signals (all dimensions here is two dimensions) inputting in to the non-linear amplifier. Ercan in col. 4 lines 58-65 teaches the first and second digital images may be obtained in any suitable manner. They may be*



*obtained simultaneously or sequentially. It is preferred that a single optical plane or path be used to ensure pixel relativity in each image, so that pixels align correctly. One image may have a longer exposure time than the other. Additionally or alternatively, an optical filter may be applied to a digital camera in taking one of the images. Ercan in abstract discloses that a related method of processing digital image information involves modifying pixel intensities according to a non-linear algorithm (examiners' interpretation: it can be a non-linear filter), with the result that one or more regions of the image have their median pixel intensities adjusted to a level which is closer to the median pixel intensity for other parts of the image. Ercan in Figs. 6A, 9A and 10A illustrate the missing information. Heller et al. (Heller), Heller in Fig. 6 illustrate in step 84, compensation pixel values are generated to replace the missing data from the defective pixels in sensor array 12. In one preferred embodiment, examining the pixel values of the pixels surrounding the defective pixels generates the compensation pixel values. See Heller in col. 4, lines 10-35. Referring to the specification on page 15 lines 20-21 Applicant discloses that filter 232 can be a non-linear filter that is provided to remove narrow peaks and valleys within the color difference signal. Heller in col. 4 lines 5-9 teaches that Controller unit 16, depending upon the configuration, can perform one of a wide variety of image processing operations including, for example, pattern recognition operations, filtering operations, Fourier transform operations, and the like. Thus, the pixel values of each surrounding pixels of a defective pixel are averaged to arrive at a compensation pixel value. In another embodiment, the pixel value of a pixel that precedes the defective pixel is used as the compensation pixel value. Therefore Ercan and Heller suggest applicant's invention. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention*

*was made to incorporate the teaching of Heller into Ercan in order for interfacing with the programmable non-volatile memory and accessing the defective pixel location information; and a input/output port for communicating with control and post-processing circuitry.*

### **Conclusion**

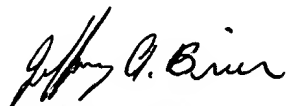
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Javid A Amini whose telephone number is 703-605-4248. The examiner can normally be reached on 8-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 703-305-4713. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Javid A Amini  
Examiner  
Art Unit 2672

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JEFFERY A. BINER  
PRIMARY EXAMINER